Forest Health Protection
Pacific Southwest Region

Date: November 4, 2014
File Code: 3400

To: Merv George, Forest Supervisor, Six Rivers National Forest

Subject: Site visit to the Bluff Creek Road area (Orleans/Ukonom Ranger District) to assess network of Port-Orford-cedar seasonal road closure gates (FHP Report No. N14-05)

At the request of Nolan Colegrove (District Ranger, Orleans/Ukonom Ranger District), I joined Roberto Beltran (Forester, Orleans/Ukonom Ranger District) on August 28, 2014, for a site visit to the Bluff Creek Road. The objective was assess the network of Port-Orford-cedar (POC) seasonal road closure gates in the area and provide recommendations to improve their effectiveness. During the day, Roberto and I visited most of the gates on FS roads 13N01 (Bluff Creek Road), 12N10 and 12N13. We also visited the POC root disease infestations near Slide Creek and Notice Creek, Blue Lake Trail turnout and Louse Camp. The following day, I sent an email with my observations and recommendations to Nolan Colegrove, which was cc'd to Roberto Beltran, Merv George and Phil Cannon. This report restates and formalizes the information in the 8/29/2014 email.

Background

The Bluff Creek/Fish Lake area of the Orleans/Ukonom Ranger District has been ground zero for POC root disease ever since the pathogen, *Phytophthora lateralis* was introduced to the POC at the Blue Lake Trailhead parking area in the early to mid-1990's. Since that time, the pathogen spread down the Fish Lake Creek watercourse to Fish Lake and beyond (POC mortality was first observed beyond the spillway out from Fish Lake in 2001). Additional human-caused spread by the movement of infested mud has spread the pathogen to road intersections at Aikens (2000), Slide (2007) and Notice Creeks (2009), as well as adjacent to the west side of Fish Lake Campground (2010).

Over the years, a variety of management actions have been established in the area to contain the pathogen and reduce its impacts. One of the actions that was taken in the mid-1990's was to install a network gates to eliminate vehicles from high-risk roads (where POC is adjacent to the road) during the wet periods of the year. In order to prevent mud that is infested with organic matter from dead and dying POC from being picked up and deposited elsewhere, these gates are shut and locked during the winter months (roughly early October through late April) and during major rainstorms during the rest of the year. Installation and enforcement of wet-season road closures can be problematic, as their effectiveness largely depends on the buy-in and cooperation of the public. Because they

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are often the target of vandalism from people who feel that they unreasonably restrict public access, these gates must be continually repaired and maintained. In addition, people who have property inside the gates need to have gate keys in order to have access to their land, and often leave the gates open for their convenience or pass their keys on to other people. Because the issues regarding the gate system in the Bluff Creek area have been particularly challenging, the District does not want to have any more gates and road closures than are absolutely necessary, and wants to be sure that all gates are strategically placed for maximum impact and effectiveness. For these reasons, Nolan Colegrove asked for my opinion on whether any of the gates in the Bluff Creek area can reasonably be left open during the wet season or be relocated in order to reduce negative impacts on the public.

When considering POC root disease management in general, and specifically about closing or leaving open seasonal gates during the wet season, I find it helpful to keep in mind that POC root disease prevention is often a business of 1) playing percentages and 2) concentrating efforts and dollars where it will do the most good. It's also very important to keep the specific objectives in mind. For example, are the gates placed in order to keep the pathogen out of an uninfested area or to keep it from spreading out to an infested one? Different management actions may be appropriate for each objective, but unless one is careful, it's easy to mix up the two. Also, over the years, I've come to recognize that seasonal gate networks are just one of several management tools that are available to manage the spread of POC root disease. Other Forests, such as the Shasta-Trinity National Forest, have put greater reliance on more passive controls, such as armoring roads to prevent standing surface water and potholes, and strategically removing healthy POC from the high-risk zones immediately adjacent to roads, where the pathogen is most likely to drop off and infect. I've slowly come to believe that these passive controls are often more effective than active ones, because they generally tend not to not require specific actions from the public, or trigger unintended reactions.

Observations and Recommendations

During my visit, Roberto and I drove up the Bluff Creek Road from CA Highway 96 and stopped at the Port-Orford-cedar (POC) root disease infestation near Slide Creek (approx. 4.5 miles up the Bluff Creek Road), the 5-mile gate, the Blue Lake trail turnout (ground zero!) and the 12-mile gate. We then turned down onto FS Road 12N10, stopping at the gate at the intersection, then drove on to the POC root disease infection site near Notice Creek, and then went on to Louse Camp. Following are my observations and recommendations:

1. POC Gates At CA Hwy. 96 and Bluff Creek Road and the Five-Mile Gate (five miles up Bluff Creek Road, Figure 1). While driving up the Bluff Creek Road, Roberto said that Nolan was interested in my opinion regarding the possibility of leaving the gate near the intersection of Hwy 96 open year-round while maintaining a seasonal closure of the 5-mile gate. If the objective of the Hwy 96 gate is to not allow pickup of infested mud from the POC root disease infestations at the crossings of Aikens and Slide Creeks (Figure 2) between Hwy 96 and the 5-mile gate (the turnoff road to Fish Lake is also gated, so that infested area is excluded as well), then there is probably not much of a

problem, as the road at the two infection sites is well armored. In addition, the infected POC at Aikens Creek are "down a hole" away from the road. However, if the objective is to keep new infestations from being established, then there are plenty of places with POC immediately adjacent to the roadside (within 50 feet below the road or 25 feet above the road) where this could easily happen. Roberto also said that the 5-mile gate is often left open by a landowner, and pointed out that it's easier to tell whether the gate at Highway 96 is open or closed since you don't have to go 5 miles up the road to check the gate. He also said that after all these years, people generally know that all of the Bluff Creek Road is closed during the wet season. For these reasons- particularly because we can't count on the 5-mile gate being closed and because monitoring is easier down by Hwy 96, it appears to be best to continue with the closures of both the bottom and 5-mile gates. The same logic applies to the 12-mile gate as well.

2. Blue Lake Trailhead Parking Area. As was stated above, the area at the Blue Lake trailhead parking area, approximately one mile above the 5-mile gate (between the 5 and 12-mile gates), is where *P. lateralis* was initially introduced sometime in the early to mid-1990's. POC mortality has been extensive in this area, particularly in the vicinity of the trailhead and just below, where Fish Lake Creek crosses Bluff Creek Road. We think that the initial introduction of the pathogen most likely occurred when someone pulled their car with infested mud right alongside a POC at the trailhead to camp for the night. In response, a fence was installed to keep people and vehicles from getting near the POC (Figure 3), and the pullout/parking area was graveled to prevent water puddle formation and mud accumulation. Both actions were done in order to reduce potential pickup of the pathogen and transport away from the site. In addition, information signs were placed at the site and improvements were made to the trail to Blue Lake in order to keep the trail dry so the pathogen could not be as easily dropped off near the POC that are along the trail. It's now been over 10 years since these improvements were made, and some additional maintenance is needed:

- Part of the fence separating vehicles from the large dead POC is broken (Figure 4). This should be fixed.
- Lots of small POC have seeded in next to the fence. These should be removed.
- A new application of gravel to the pullout (Figure 5) is needed. The gravel should come from a clean (pathogen-free) source.
- The trail to Blue Lake should be checked to see if any additional maintenance is needed. Roberto said he could do it. Next time I'm in the area, I may give it a look as well!

Since my visit to the area, Roberto has reported that the second and third items on this list have been taken care of. This is good! The remaining items should be addressed as soon as possible.

3. Twelve-Mile Gate (Figure 6). As stated above, unless there are specific reasons for leaving the 12-mile gate open, it should probably remain closed during the wet season. Roberto said that the gate will be repainted, reset and re-signed.

4. POC gates along FS Roads 12N10/12N13- Refer to map- Figure 7. Currently, two gates keep the area along FS Roads 12N10 and 12N13 closed during the wet season. These roads link the Bluff Creek Road and the Gasquet-Orleans (G-O) Road (FS Road 14N04), and provide access from Orleans and Somes Bar. A gate on the west side of the area is on Road 12N10 near the intersection with the Bluff Creek Road (Figure 8). The gate on the east side of the area is on FS Road 12N13 near the intersection with FS Road12N12, which links up with the G-O Road. Approximately 14 miles of road runs between the two gates. These gates were established in Oct. 2008, shortly after fires, but have been unpopular with the public because, among other reasons, they close off a popular Christmas tree gathering area. In addition, the closure cuts off access to Louse Camp, a small, but popular campground. Roberto said Nolan was interested in my observations and opinions regarding whether either or both of these gates can be left open during the wet season, or if the east-side gate at the 12N12/12N13 intersection could be replaced with one in a new location allowing wet-season access to more of the area. Moving the east-side gate is under consideration because much of the area along the east side of Road 12N13 does not have any POC.

Again, in considering whether or not the gates can be left open or relocated, it is important to distinguish between the objectives of preventing spread of the pathogen from infested areas within the gated area versus the objective of preventing the introduction of the pathogen from outside the gated area. The only known infestation site within this gated area is at Road 12N10 along an unnamed creek near Notice Creek, approximately 4 miles east of the west-side gate at the Bluff Creek Road/12N10 intersection. I visited this area shortly after Todd Salberg discovered the new infestation in 2009. Sample collections that I took and sent to the diagnostic lab at OSU confirmed the presence of *P. lateralis*. At the time, it looked like the pathogen had been there for several years, and was perhaps introduced by a marijuana grower(?). While at the Notice Creek infestation site, Roberto and I observed that the infected POC on both sides of the road are located well below the road (Figure 9). The unnamed creek that runs through the middle of the infestation passes through a large culvert that is old, but still functional (Figure 10). Bottom line is that water and/or mud from the infection site is unlikely to get to the road unless it is picked up from below and brought up by humans or animals. The most likely way for this to happen would be for humans to go down to the creek and bring mud up on their boots, which could then be transported elsewhere. While this is a fairly low-probability occurrence, it would be helpful to limit human activity at the site. While at the site, Roberto pointed out a small road that leads to a dispersed camping area within and just above the infestation area (Figure 11). He suggested placing rocks or boulders at the entrance to this access road to discourage people from camping at the site. This is a good idea which should be implemented as soon as possible. In addition, small POC at the pullouts on both sides of the road above the culvert (Figure 12) can be removed to provide a more host-free area in case someone tracks infested mud up to the side of the road (note that there will still be some large POC in this area).

Because it is unlikely that *P. lateralis* can be moved out from the infestation site (particularly by vehicles), this means that the main utility of the gates is to prevent the pathogen from being brought into the area from the outside. During the wet season, if the Bluff Creek Road gates at Hwy. 96, 5-mile 12-mile and at the Bluff Creek Road/12N10

intersection are closed, the only access to the area from Orleans and Somes Bar would be from the G-O Road to FS Road 12N13 via Road 12N12 (the only other road into the area, FS Road 13N01D, was recently decommissioned). This east-side access is currently blocked by the gate on FS Road 12N13 near the intersection with Road 12N12. Roberto pointed out that most of the area along the east end of 12N13, as well as the roads that run off of it, does not have any POC. POC is not present until about ½-mile before FS Road 12N13 crosses Bluff Creek, roughly 6 miles west of the east-side gate at 12N12/12N13. All of this area is currently being closed off for no good reason. Placement of a new gate further to the west would accomplish the same thing while providing year-round access to the land which does not have POC. If one wanted to provide maximum protection via the installation of POC gates, then the logical place to put one would be just before the first POC is encountered, on FS Road 12N13, ½-mile east of Bluff Creek. This would provide maximum access while completely avoiding roadside POC. However, this location cuts off access to Louse Camp. If one wanted to provide access to Louse Camp but still provide protection to as much POC as possible, the gate would have to be located on Road 12N10, just above the spur road that leads into Louse Camp. While this would not provide enhanced protection to <u>all</u> of the POC in the area, it would protect most of it, while also isolating the POC infestation near Notice Creek.

While the relocation of the east-side gate would provide enhanced protection to the POC in the 12N10/12N13 area, even without the east-side gate, the risk of introducing *P. lateralis* into the area by vehicles form the east is low. This is because, according to Roberto, the east-side access along FS Road 12N13 is very rocky, which provides ample opportunity for vehicles carrying pathogen-infested mud to knock it off prior to reaching the POC. Depending on the degree of risk that the District is willing to accept, doing without an east-side gate could be an acceptable alternative. However, if this is done, the seasonal closure of the west-side gate at 12N10/Bluff Creek Road would need to be continued, and measures to reduce the risk of transport of the pathogen from the Notice Creek infestation (blocking access to the dispersed campsite, removing roadside POC and armoring the road) would need to be instituted and maintained

In summary, the alternatives are:

1. Close the west-side Bluff Creek Road/12N10 gate during the wet season, leave the east-side gate at 12N12/12N13 open year-round and don't install a new gate- **POC Root Disease Introduction Risk LOW**

2. Close the west-side Bluff Creek/12N10 gate during the wet season, leave the east-side gate at 12N12/12N13 open and install/close a new east-side gate at 12N13 above the POC (no access to Louse Camp)- **POC Root Disease Introduction Risk VERY LOW**

3. Close the west-side Bluff Creek/12N10 gate during the wet season, leave the east-side gate at 12N12/12N13 open year-round and install/close a new east-side gate at 12N10 immediately above the spur road to Louse Camp (providing access to

the camp)- **POC Root Disease Introduction Risk Lower Than Alt 1, But Higher Than Alt 2**

Obviously, factors unrelated or indirectly related to POC root disease risk (such as public access, perception of a willingness to compromise, and fostering acceptance of POC management actions in other areas) will affect the District's decision of which alternative to implement. My gut reaction, given what I've seen and discussed with Roberto is that the second alternative (providing access to Louse Camp) may be the best compromise.

5. Louse Camp. After driving along FS Roads 12N10 and 12N13, Roberto and I visited Louse Camp. Located on approximately 3 acres, Louse Camp has about 6 campsites, 3 picnic tables and 4 fire rings. Overstory vegetation consists of Douglas-fir and POC. There are about 5-10 large (24"+ DBH) POC within the campsite area. Vehicles can park immediately adjacent to POC, which means that if any vehicles manage to carry infested mud, they could very easily infect the POC. This would be a big problem, which would mean that the campground would need to be closed immediately, have all POC removed, and would have to remain closed until the *P. lateralis* dies out, which would take about 4-7 years. Fortunately, since there is no easily accessible infected POC in the area (assuming the recommended measures at the Notice Creek infestation are carried out), the risk of introduction of POC root disease is low. However, if the District wanted to reduce the risk even further, they could 1) preemptively remove the POC from the campground or 2) restrict vehicle parking to an area away from the POC and make it a walk-in camp. However, my gut reaction at this point is that the small degree of added protection to POC in the surrounding stands does not justify the removal of POC inside of Louse Creek or its conversion to a walk-in camp. Such an action would make better sense if Louse Camp was more accessible or highly-used.

In addition, while Roberto and I were at Louse Camp, I noticed a large, highly defective (36+" DBH) POC in one of the campsites. The POC had a moderate lean, cracking on the lower bole and was heaving soil around the base of the tree (Figures 13 and 14). While the tree was bowed upward, which usually indicates that the lean has been there for a long time (a sign of stability), the associated cracking and soil heaving indicated that the tree was actively in the process of failing. In addition, the POC had a very large fire scar with associated decay (Figure 15) . Because the tree was in the middle of a campsite and easily able to strike a number of targets, it was deemed to be HIGHLY HAZARDOUS Immediate action was particularly important, since this discovery was just prior to the Labor Day weekend. In response, Roberto and David Markin (Supervisory Forestry Technician) returned to Louse Camp on August 29 and blocked access to the road into Louse Camp, preventing occupancy until the tree could be felled. Felling of the tree was done next week. **Roberto and David are to be commended for their prompt action!**

6. One last consideration- All of the recommendations above highlight the importance of prevention over having to deal with a POC root disease infestation after it is established. Anything that can be done to educate the public of the danger of transporting *P. lateralis*, such as installing information boards, distributing brochures and just talking with the public can help. In particular, it is important to stress the effectiveness of vehicle washing prior to entering areas with POC. This is one of the best things that the public can do!

Summary and Conclusions

Many recommendations are given above. In general, the degree to which the recommendations are adopted depends on the degree of natural resource risk that the District and the Forest finds to be acceptable. Because many public and resource values must be considered, it is recognized that not all management actions solely aimed at disease prevention should be taken at all times. With that in mind, my recommendations are as follows:

1. Keep the gates along Bluff Creek Road (Hwy 96, 5-mile and 12-mile gates) and at the intersection of Bluff Creek Road and FS Road 12N10 (west-side access to the 12N10/12N13 area) closed during the wet season. Allowing limited access by leaving the Hwy 96 while keeping the 5-mile gates closed may be acceptable if the Forest wants to accept a higher risk of pathogen introduction. However, monitoring of the gates is much simpler and effective if the Hwy 96 gate remains closed.
2. Maintain road hardening improvements at the Aikens and Slide Creek infestation sites. Do what you can to prevent vehicles from stopping or congregating in the two areas.
3. Maintain POC exclusion and gravel base (reducing mud, surface water accumulation and potholes) at the Blue Lake Trailhead parking area/pullout. Repair the fence that separates vehicles from POC. Check the trail to Blue Lake to see if any additional maintenance is needed.
4. Reset, repaint and re-sign the 12-mile gate.
5. At the Notice Creek infestation area- place rocks or boulders at the entrance to the access road to discourage people from camping at the site. Remove small POC at the pullouts on both sides of the road above the culvert to provide a more host-free area in case someone tracks infested mud up to the side of the road.
6. POC gates along FS Roads 12N10/12N13- Keep the gate at the intersection of Bluff Creek Road and FS Road 12N10 closed during the wet season. Depending on the degree of risk of pathogen introduction that the District finds acceptable, the gate at FS Road 12N12/12N13 may be removed or kept open year-round with one of the following additional management actions: 1) don't install a new gate, allowing unrestricted access from the east- POC root disease introduction risk LOW; 2) install/close a new gate at 12N10 immediately above the spur road to Louse Camp, providing access to the camp- POC Root Disease Introduction Risk LOWER; or 3) install/close a new gate at 12N13 above the POC- no access to Louse Camp- POC Root Disease Introduction Risk VERY LOW.
7. Continue educating the public on the danger of transporting *P. lateralis* by installing information boards, distributing brochures and just talking with the public. In particular, it is important to stress the effectiveness of vehicle washing prior to entering areas with POC.

Thanks again for the opportunity to provide input regarding the POC gate network in the Bluff Creek area. If you have any questions regarding this report or need additional information, please feel free to contact me at 530-226-2436.

/s/ Pete Angwin

Pete Angwin, Plant Pathologist
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CC: Nolan Colegrove, Jeff Jones, Roberto Beltran, David Markin, Phil Cannon, Sherry Hazelhurst, Chris Fischer, Cynthia Snyder, Sheri Smith

Figure 1. 5-mile gate on Bluff Creek Road.

Figure 2. POC root disease infestation at Bluff Creek Road and Slide Creek crossing.

Figure 3. Fence between POC root disease infestation and Blue Lake trailhead parking area.

Figure 4. Broken fence at Blue Lake trailhead.

Figure 5. Blue Lake trailhead parking area.

Figure 6. 12-mile gate on Bluff Creek Road.

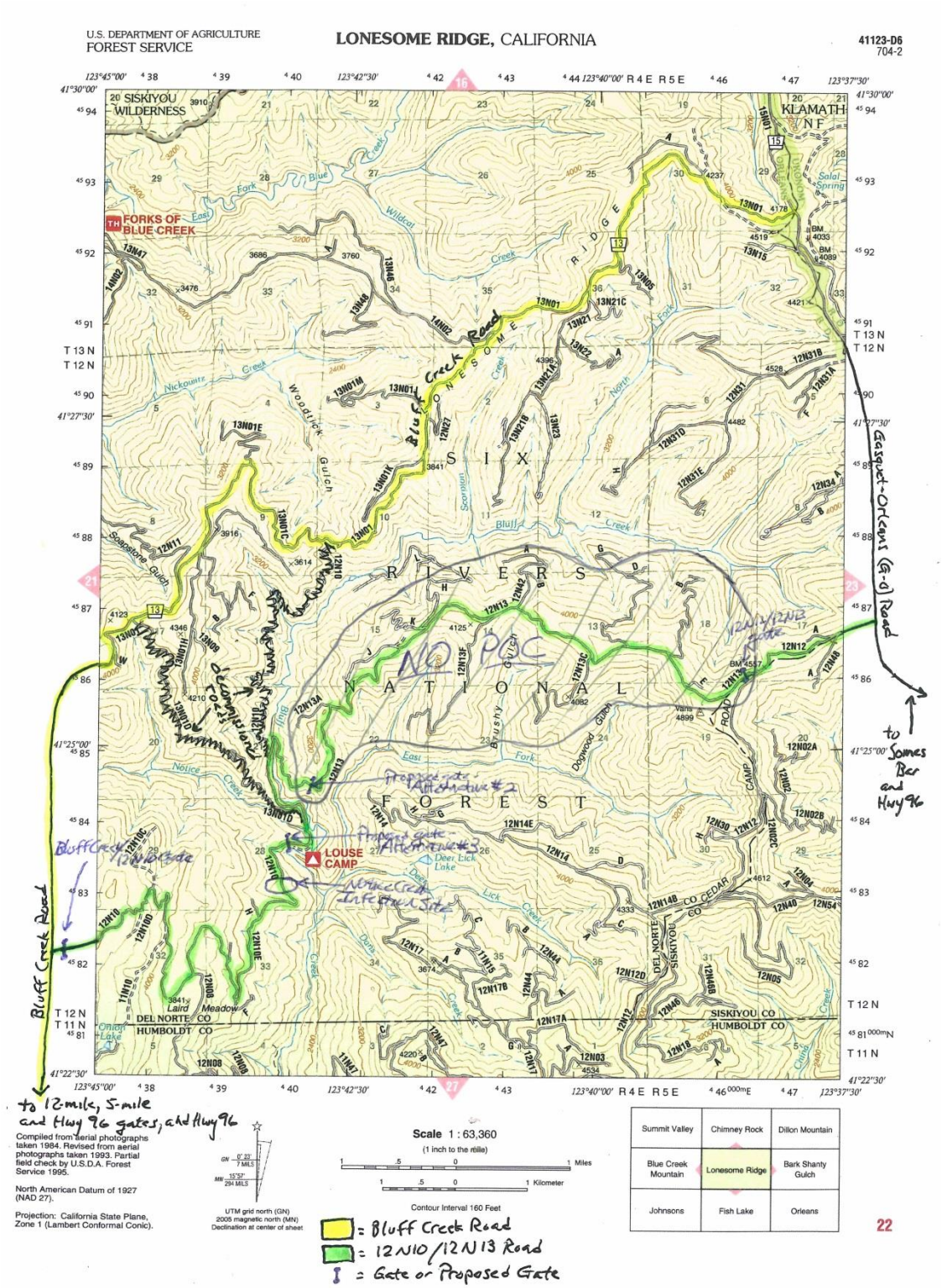

Figure 7. Major features in the vicinity of FS Roads 12N10 and 12N13, including existing and proposed POC seasonal closure gates, Louse Camp, Notice Creek infestation site and the POC-free area along FS Road 12N13.

Figure 8. West-side gate on FS Road 12N10 at Bluff Creek Road

Figure 9. View from FS Road 12N10 down into the POC root disease infestation at an unnamed creek near Notice Creek.

Figure 10. Old, but functional culvert Under FS Road 12N10 at Notice Creek POC root disease infestation area.

Figure 11. Informal road to dispersed camping area at Notice Creek POC root disease infestation area.

Figure 12. POC ingrowth along FS Road. 12N10 at Notice Creek POC root disease infestation area.

Figure 13. High hazard POC at Louse Camp.

Figure 14. High hazard POC at Louse Camp. Note cracking in lower bole, fire scar with associated decay and heaving soil at base.

Figure 15. High hazard POC at Louse Camp. Note large fire scar with associated decay.